

Operation & Maintenance Support Information (OMSI)

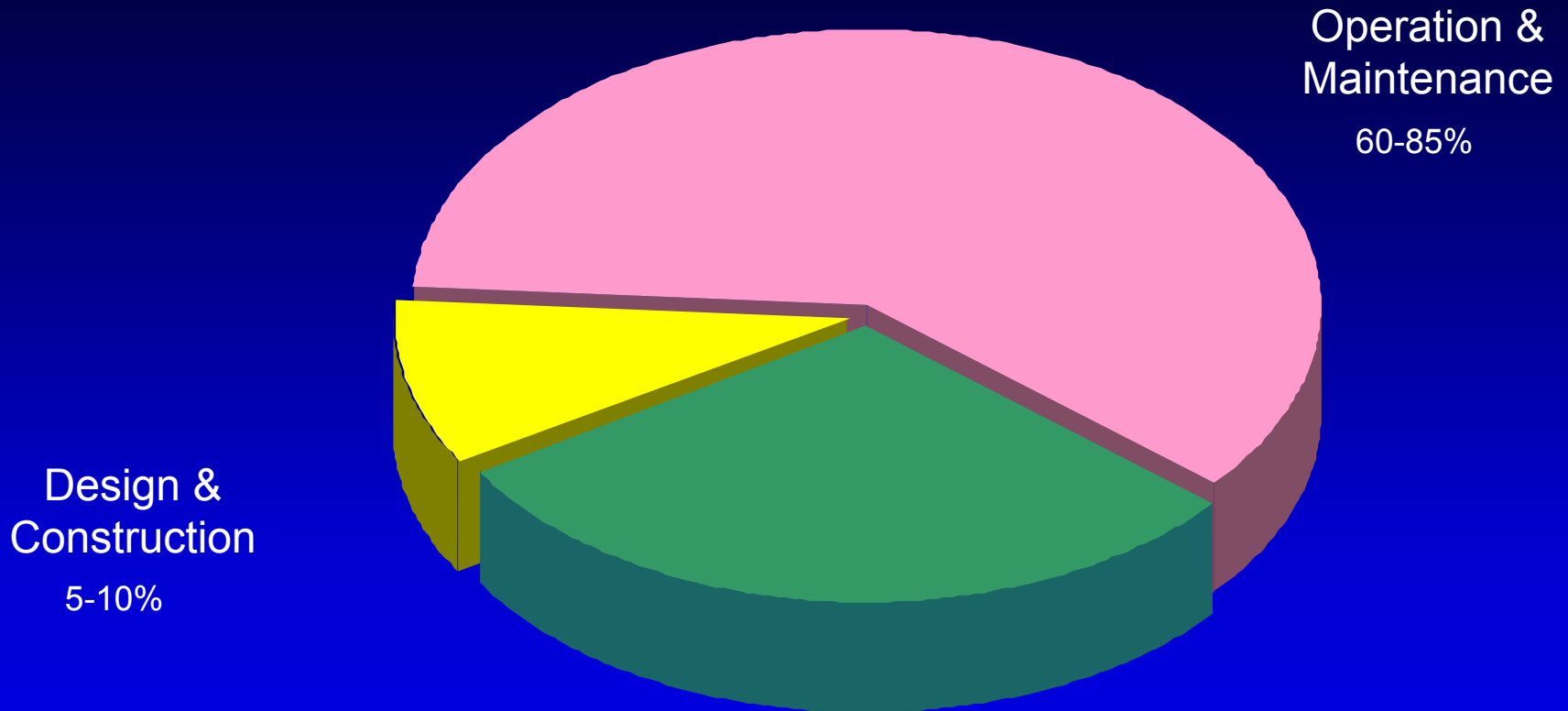
LANT Commissioning Workshop

5 February 2003

Why OMSI?

Life Cycle Cost

30 year period



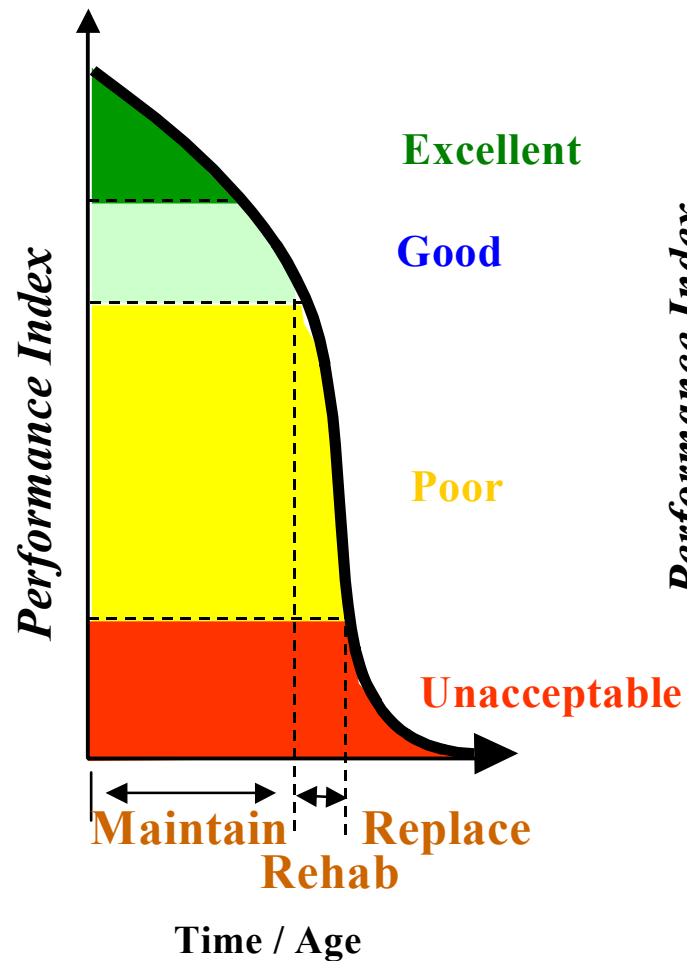
Source: (Stewardship of Federal Facilities, 1998)

Land Acquisition, Planning,
Renewal/Revitalization, & Disposal

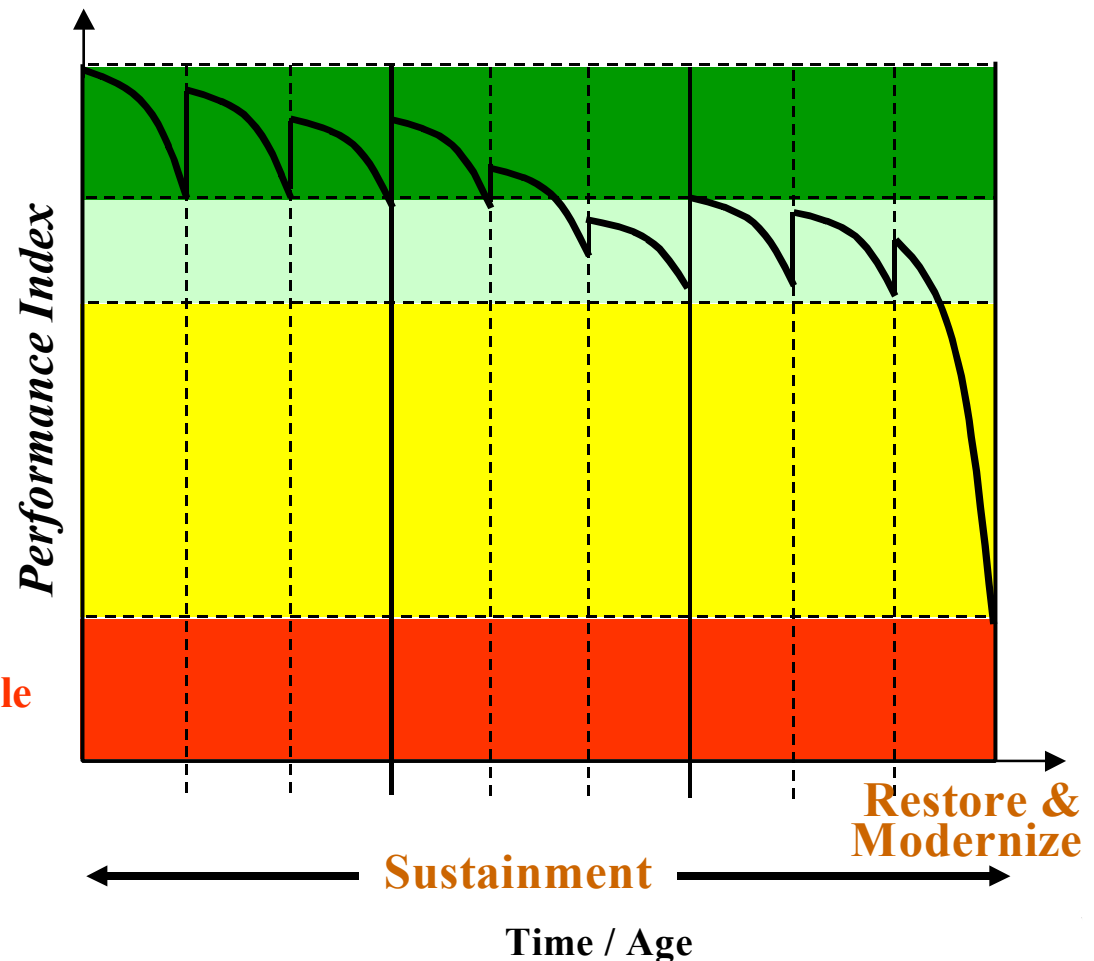
5-35%

Service Life and Performance

Deferred Maintenance
Deterioration Curve



Sustainment
Deterioration Curve



What is OMSI?

- **Information** that helps the Facility User and PW Staff effectively Operate, Maintain and Repair a Facility.

Benefits

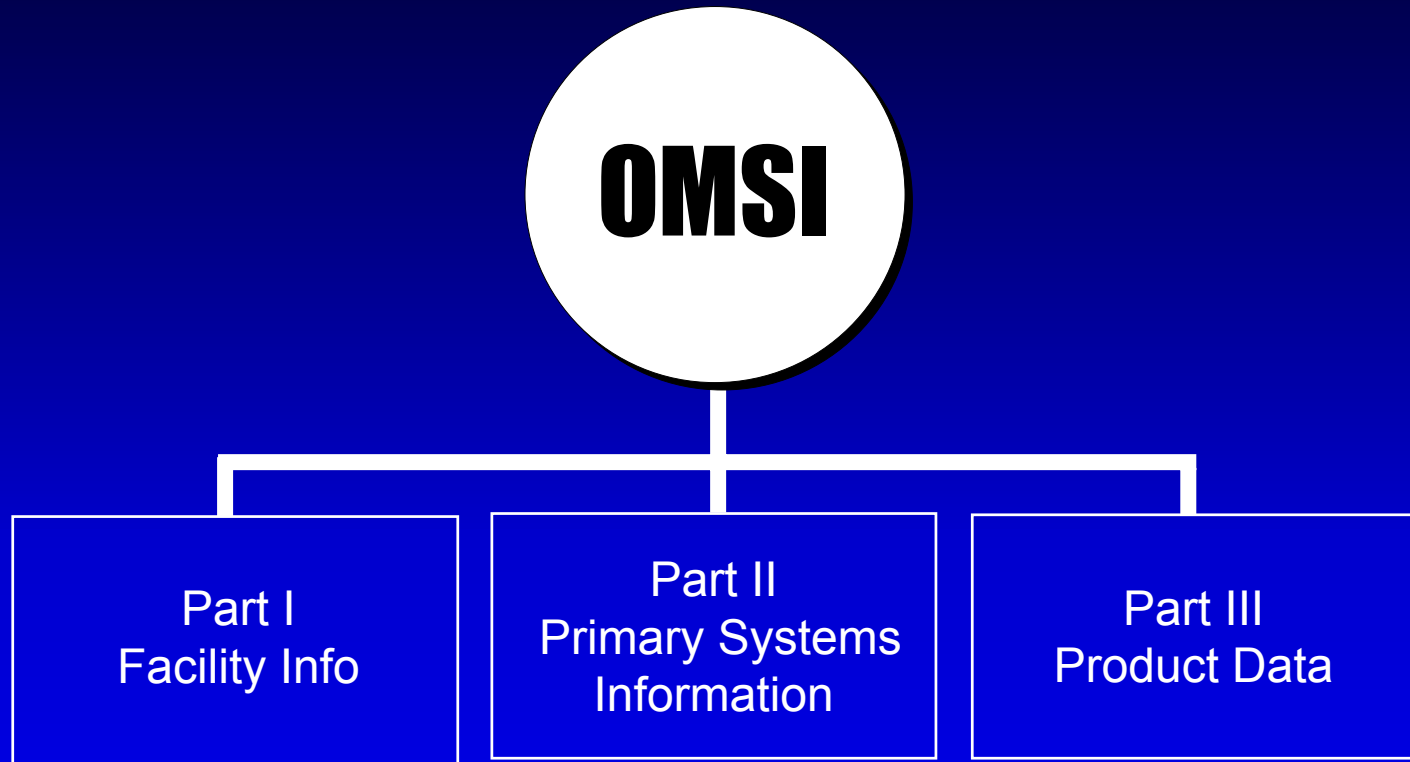
- Provides Data for CMMS (Archibus, Maximo, etc.)
- Planning Tool for O&M Workload, Space Planning
- Safer, More Efficient System Startup & Operation
- Orderly Compilation of all As-Built Product Data
- Faster Repairs & Reduced Downtime
- Future Alterations that Fit Original Concept
- Lower O&M Costs



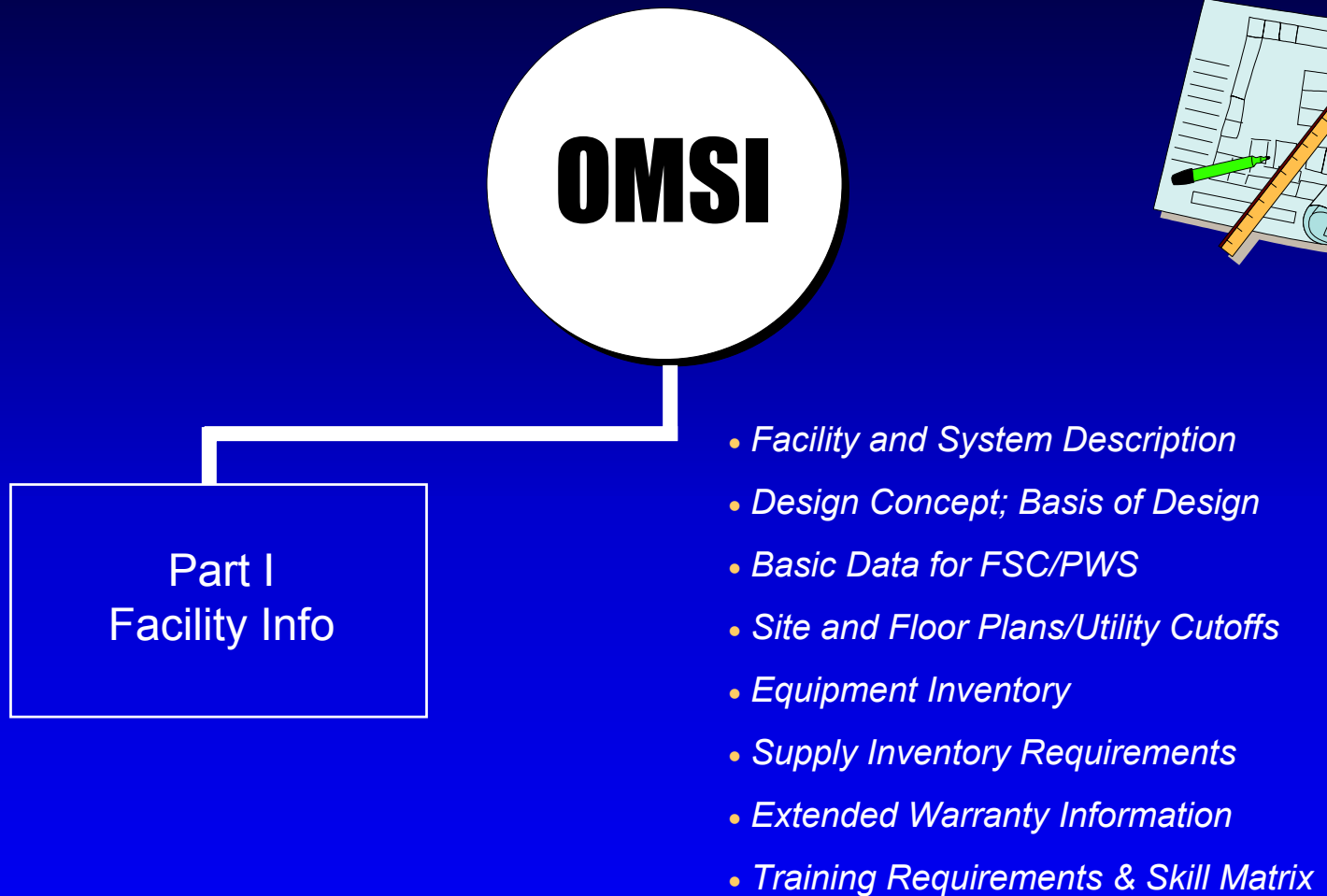
Program

- 84 OMSI delivered in last five years (\$773 Mil Constr Costs, \$6 Mil OMSI Costs)
- 29 OMSI currently working (\$385 Mil Constr Costs, \$3 Mil OMSI Costs)
- 72 OMSI Planned (\$942 Mil Constr Costs)

Principal OMSI Elements

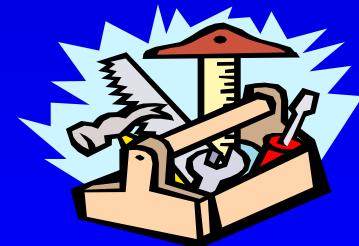


Principal OMSI Elements

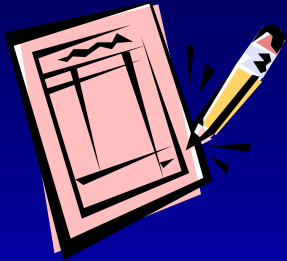


Principal OMSI Elements

- *Operation*
 - *System Descriptions*
 - *System Flow Diagrams*
 - *Start-Up & Shut Down*
 - *Operating Instructions*
- *Maintenance*
 - *Lubrication Schedules*
 - *PM Plans, Schedules and Procedures*
- *Repair*
 - *Troubleshooting Guides & Diagnostic Techniques*
 - *Repair Procedures*



Principal OMSI Elements



OMSI

- *Organized record of Material and Equipment*
- *Sorted by spec classification*
 - *Catalog Cuts*
 - *Key Shop Drawings*
 - *Test Reports*
 - *Manufacturer's Data Sheets*
- *O&M Data (Equipment not included Part II)*
- *Warranties*
- *Referenced by Parts I & II*

Part III
Product Data

Life Cycle Cost

Operation & Maintenance

60-85%

- Commissioning
- FSC/BOS Contracts
- Operating Permits

- CMMS
- JHACO
- Environmental
- Life Safety
- Utilities

Design & Construction
5-10%

OMSI
0.025-0.25%

Land Acquisition, Planning,
Renewal/Revitalization, & Disposal

5-35%



OMSI Benefits

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- Planning Tool for O&M Workload, Space Planning
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WHAT IS CMMS?



FaciliWorks TMS

mainsaver



CNE OMSI

- OMSI as Corporate Asset
- OMSI Integration with Archibus/FM
- OMSI at Sigonella



Awarded OMSI - Sigonella

<u>PROJ</u>	<u>TITLE</u>	<u>CONSTR COST</u>	<u>OMSI COST</u>
P125	Replace Fuel Storage Facility	11,521,523	199,560
P131	Base Level Communications Facility	4,247,690	77,389
P620	Quality of Life PH 1	34,957,279	251,990
P630	General Warehouse Facilities	19,817,776	256,907
Total		70,544,268	785,846
Percent	OMSI/Construction cost		1.11%

What's Next?

- Electronic Delivery of O&M Information
 - CMMS Applications (i.e., Archibus, Maximo, etc)
 - Develop Standard for Facilities Information (FMOC SGML/XML Prototype)
 - Dynamically Assembled Documents
 - Self Generated & Installed
 - Self Maintained
 - Smart Facilities / Systems
 - Automated Commissioning
 - Self Diagnostic Systems



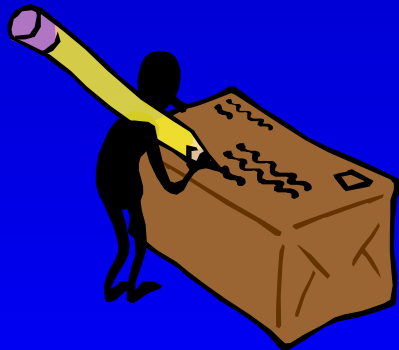
Questions & Comments



Bill Dunn, P.E. 757-322-4613

FAX 757-322-4614

dunnwh@efdlant.navfac.navy.mil



Commander

LANTNAVFACENGCOM

Attn: Code BE14

1510 Gilbert Street

Norfolk, VA 23511-2699

What is OMSI?



- **Information** that helps the Facility User and PW Staff effectively Operate, Maintain and Repair a Facility.

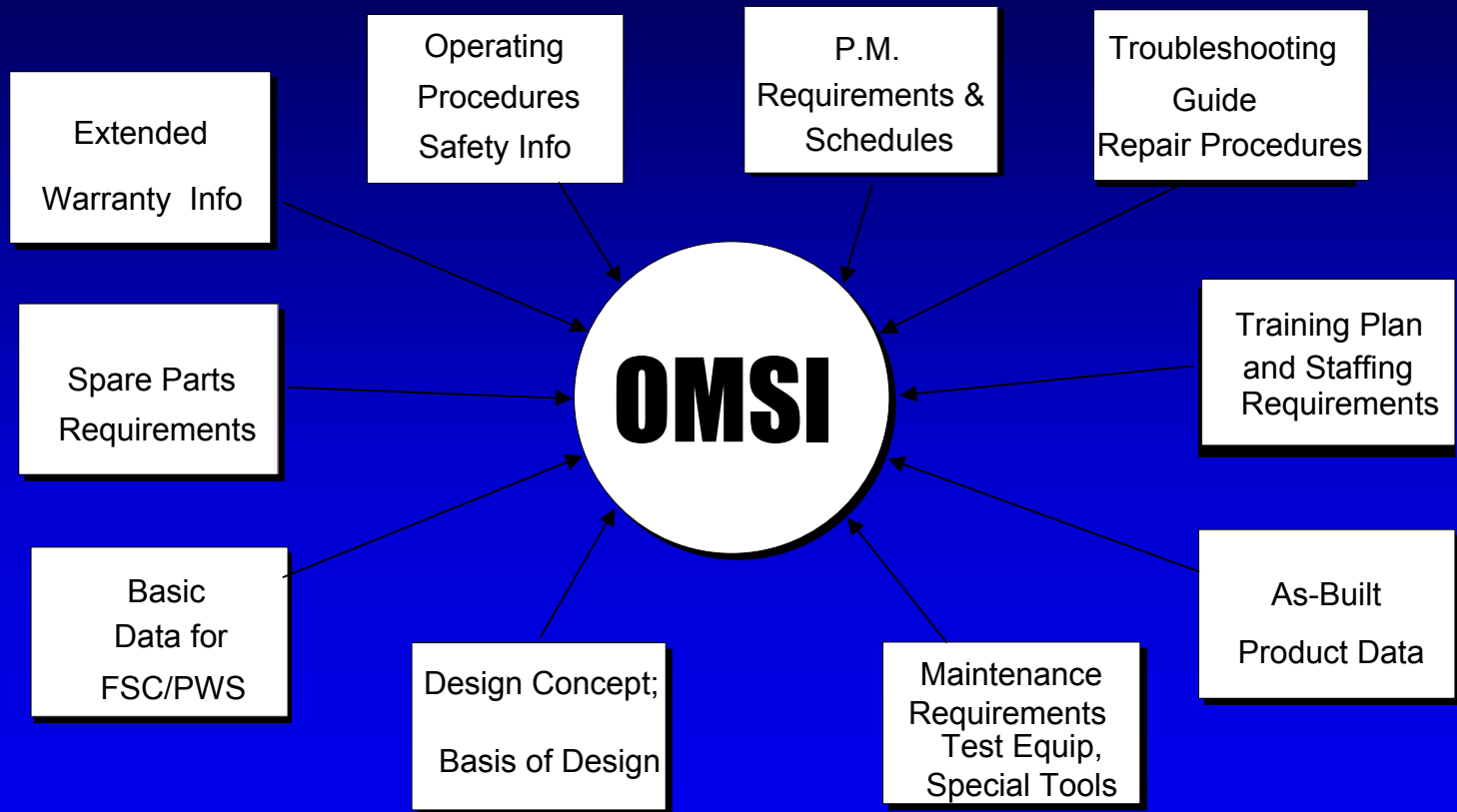
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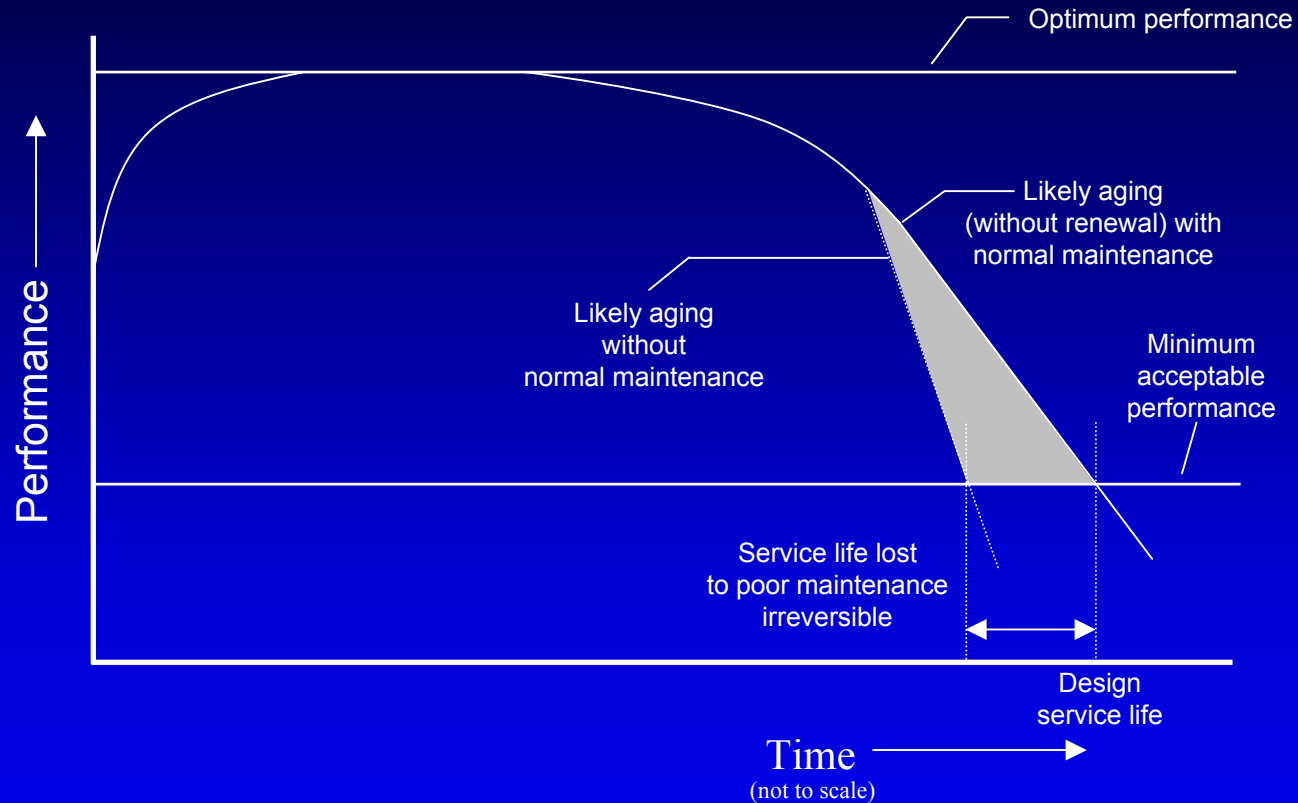
Operation & Maintenance Support Information



Pilot Project with Archibus/FM

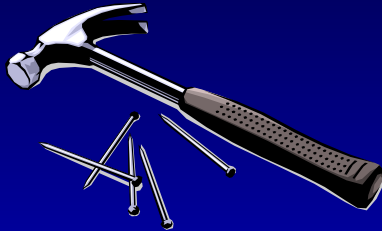


Life Cycle of Buildings

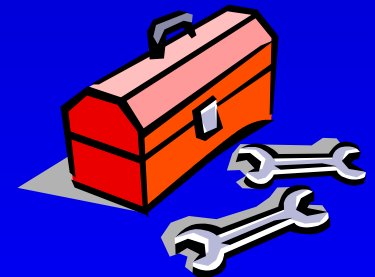


***Effect of adequate and timely maintenance and repairs on the service life of a building.
(Source Stewardship of Federal Facilities, 1998)***

OMSI: The Product



- Information that helps the Facility User and PW Staff effectively Operate, Maintain and Repair a Facility.



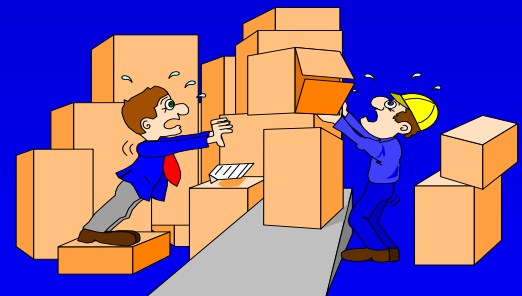
“You can buy your way out of any design mistakes, but you’ll never be able to pay for operation and maintenance mistakes!”

**Chief of NAVFAC
RADM Lou Smith**

Past Practices

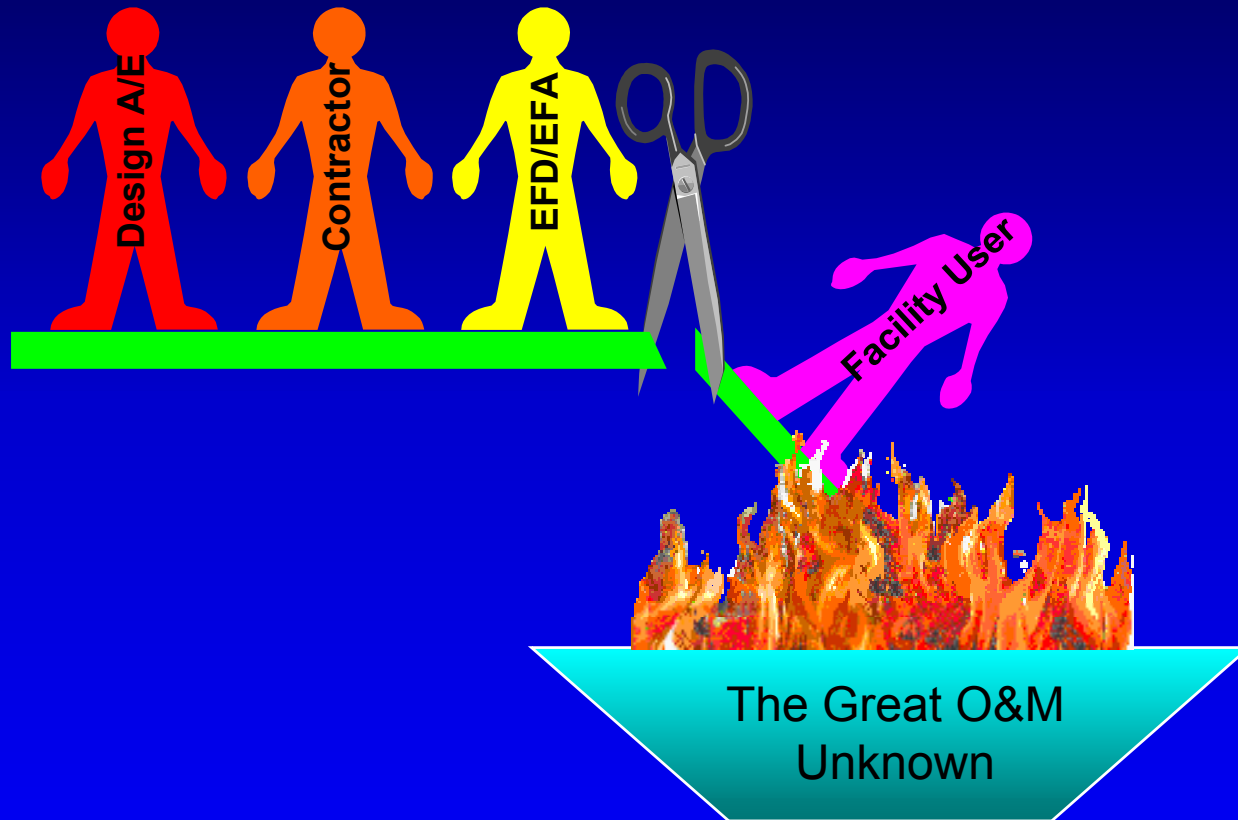
- O&M submittals in unusable format - boxes, piles
- Data quickly lost
- Poor or no PM
- Repairs difficult and costly
- Warranties not maintained or lost
- Mission impact
- Result?....

UNHAPPY CLIENTS



Facility User Perception

Acquisition



The Concept

- 1981, Construction Specifications Institute (CSI),
“Preparation of an Operation & Maintenance Manual”
 - Designer not Constr. Contractor
 - Based on As-Built Product Data
 - Not Just Complex Facilities
 - Architectural Products Included



Data Packages

NAVFAC Guide Spec Section 01781

Data Package Definition

- 1 Architectural items, simple but specific maintenance & replacement (acoustical ceiling, floor tile or carpeting system).
- 2 Less Simple, an item having a motor and some sequence of operation (refrigerated drinking fountain).
- 3 Complex equipment, having a specific troubleshooting sequence, but does not require an operator (HVAC temperature controls).
- 4 Extremely complex, extensive sequence of operation, complex troubleshooting sequence, and requiring an operator (boilers, diesel generator).
- 5 Electrical equipment, components or systems which wiring and control diagrams are needed for operation.

1 2 3 4 5

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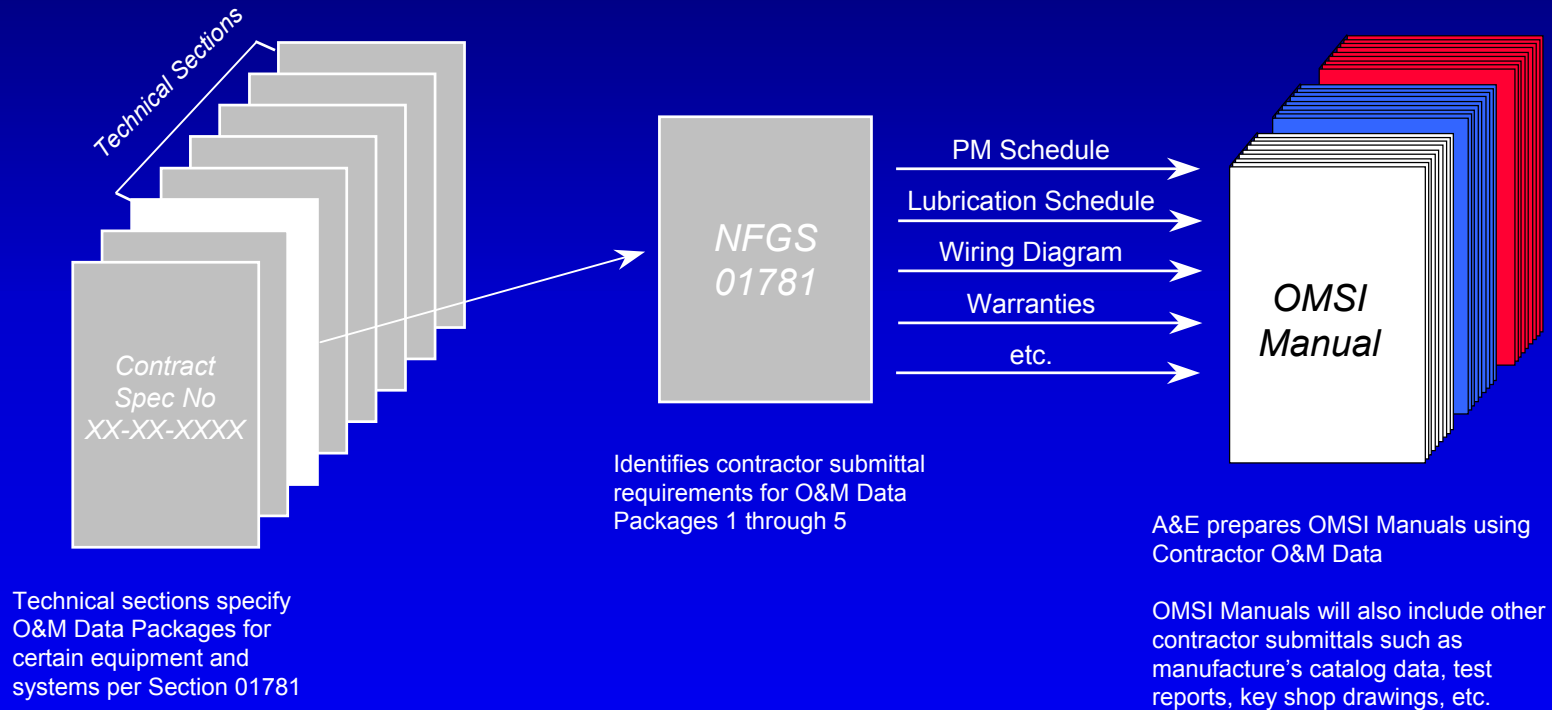
Data Package Content

Safety precautions
 Operator pre-start
 Startup, shutdown, and post-shutdown procedures
 Normal operations
 Emergency operations
 Operator service requirements
 Environmental conditions
 Lubrication data
 Preventive maintenance plan and schedule
 Troubleshooting guides and diagnostic techniques
 Wiring diagrams and control diagrams
 Maintenance and repair procedures
 Removal and replacement instructions
 Spare parts and supply list
 Corrective maintenance man-hours
 Parts identification
 Warranty information
 Personnel training requirements
 Testing equipment and special tool information
 Contractor information

NFGS 01781 O&M Data

Operation and Maintenance Support Information

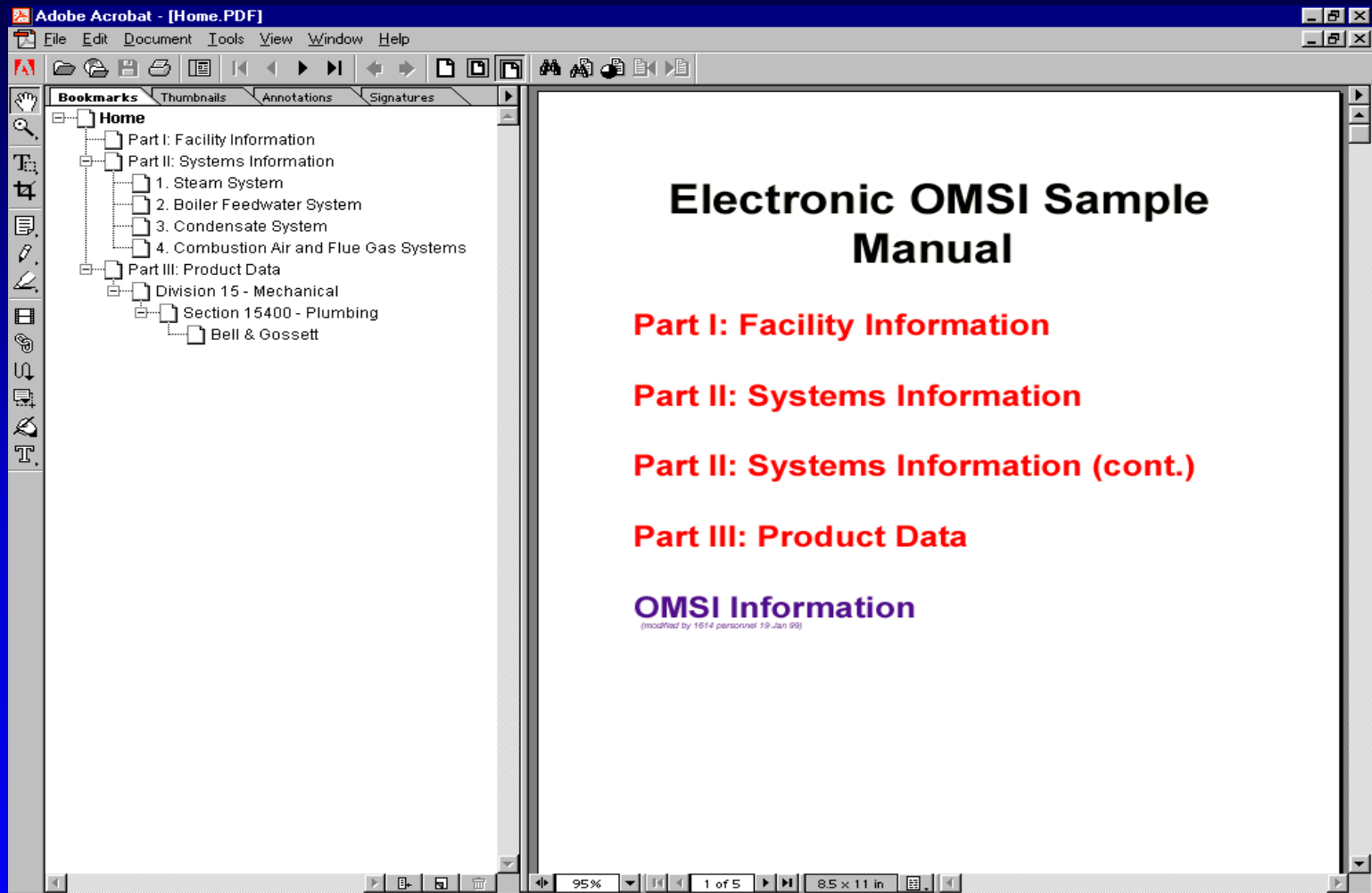
NFGS 01781 Operation & Maintenance Data



Electronic Format

- Typically hard copies
 - Special cases for electronic format
- Goal to move OMSI into electronic format
 - Enhance availability & usage
 - Received wide range of electronic formats from A&Es
- Researched best solution (cost / labor)
 - Decided on adobe's portable document format (PDF)
 - Industry standard
 - Shrink wrapped package
 - Easily implemented

Example of OMSI

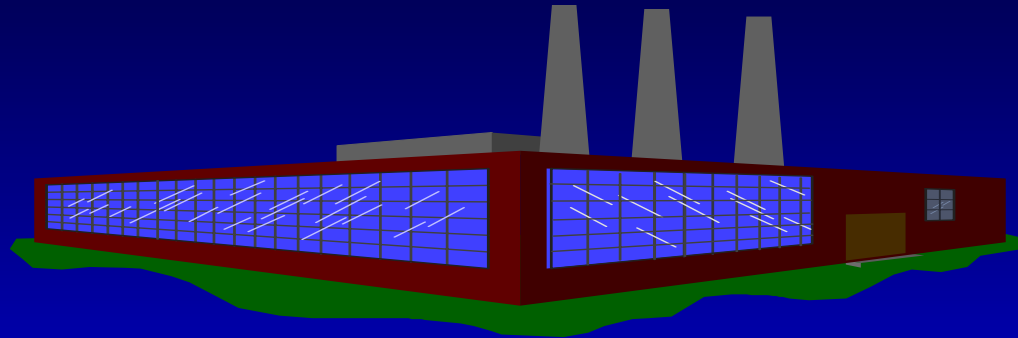


OMSI Budget Costs

Primary plus Applicable Supporting Facilities Costs	<u>OMSI Cost</u>	
	Complex	Non-Complex
Below \$5,000,000	1.50 - 2.50%	0.50 - 1.50%
\$5,000,000 to \$20,000,000	1.25 - 2.00%	0.75 - 1.25%
\$20,000,000 to \$50,000,000	0.95 - 1.85%	0.50 - 1.10%
Above \$50,000,000	0.50 - 1.20%	0.25 - 0.70%

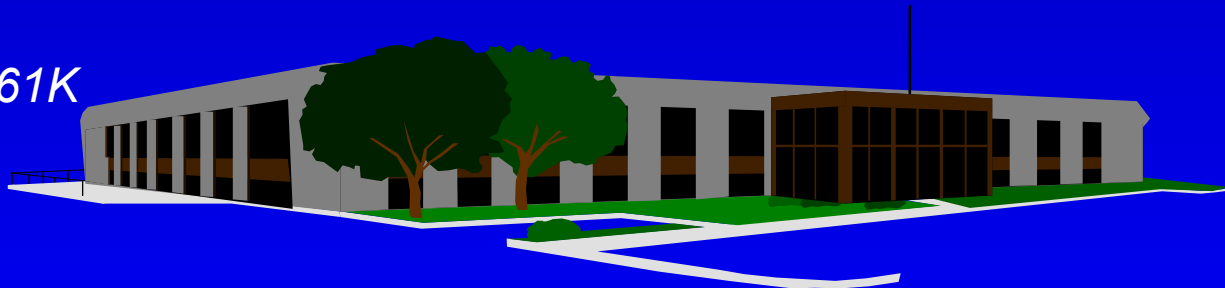
OMSI Costs

ECC=\$23.3 MIL
OMSI Cost = \$394K
1.69% of ECC



P836, Health Care Clinic, Cherry Point, NC

ECC=\$5.5 MIL
OMSI Cost = \$61K
1.1% of ECC



P161U, Addition to Training Facility, NAS Oceana

Anecdotal Evidence of Value

- A new employee of the Combat Swimmer Trainer Facility, NAB Little Creek had recently read the OMSI for the Chemical Feed System, when a chlorine tank head blew off. He followed the life safety instructions in the OMSI, “...evacuate immediately...do not take a single breath” and escaped unharmed...though the keys in his pocket had turned black from the chlorine gas.

Anecdotal Evidence of Value

- Chill water pump disintegrated during military exercise at FCTC Dam Neck. John Schaech, the MCD, was able to quickly identify and replace the pump by using the detailed OMSI information. Mr. Schaech also uses OMSI as the prime reference for contract maintenance of his HVAC systems.

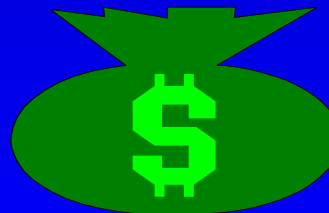
Anecdotal Evidence of Value

- During negotiations for OMSI, one A-E remarked that,
“...had he known OMSI was going to be required, he would have been more careful in preparing specs with regard to submittals required from the contractor.” When specifically asked, other A-Es have confirmed this observation.
- Several A&E's now provide OMSI to other customers as part of their design package

OMSI Benefits

- Alterations that Fit Original Concept
- Orderly Compilation of All As-Built Product Data
- More Efficient Repair Response
- More Detailed and Faster FSC Contracts
- Provides Data for CMMS
- Reduced Downtime/Improved Mission Readiness
- Very Pleased Clients

- SAVES O&M



OMSI Benefits

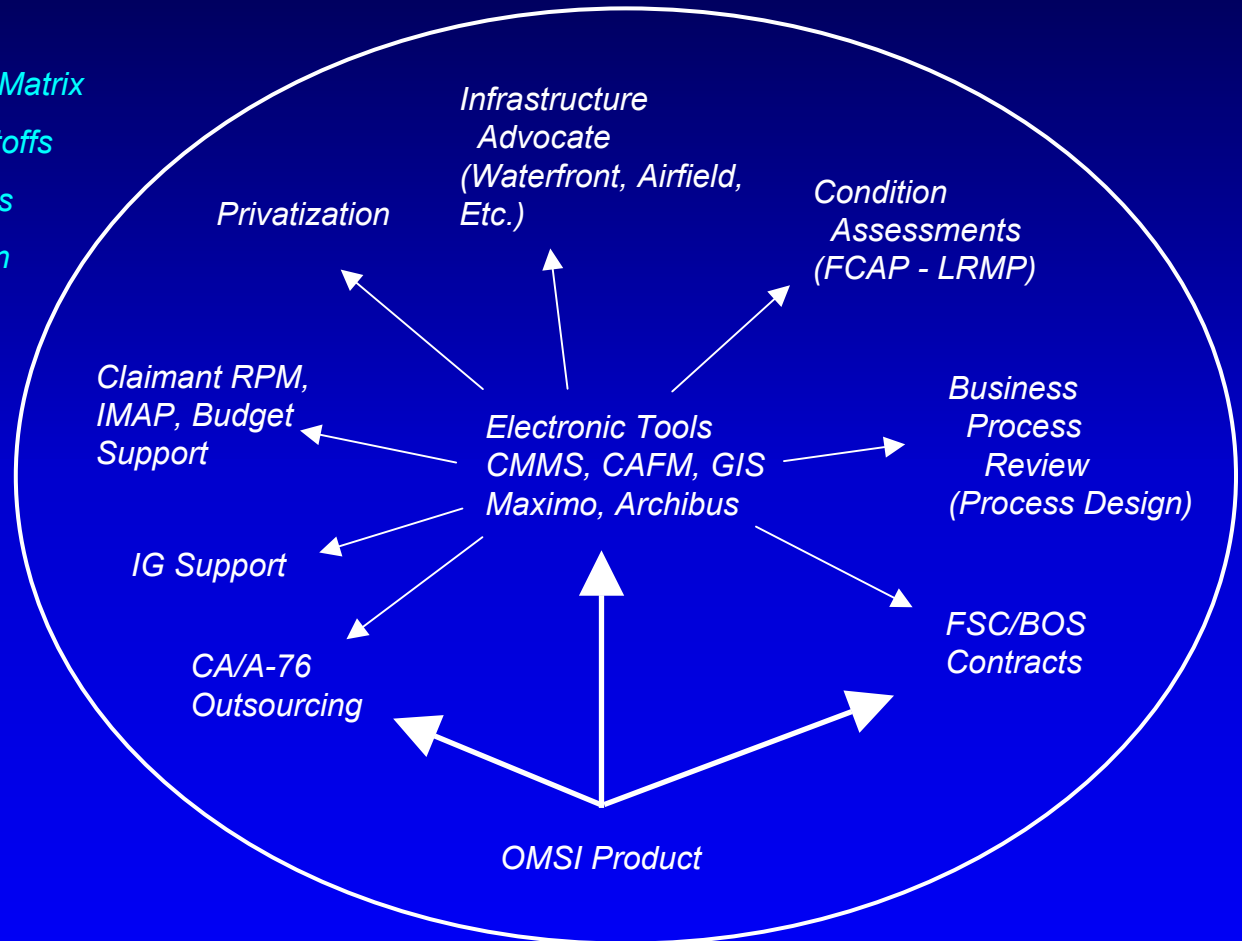
Core Products & Services

OMSI provides

- *Training Requirements & Skill Matrix*
- *Site and Floor Plans/Utility Cutoffs*
- *Supply Inventory Requirements*
- *Extended Warranty Information*
- *Basic Data for FSC/PWS*
- *Equipment Inventory*

Information to be loaded into CMMS. For example:

- *PM Schedules*
- *Equipment Inventory*
- *Utility Requirements*
- *Safety Requirements*
- *Drawings*



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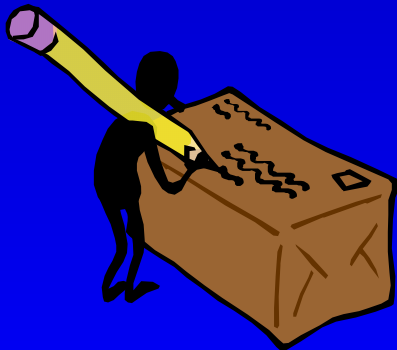




Questions & Comments



Paul DaVia, P.E. 757-322-4647
FAX 757-322-4715
daviapc@efdlant.navfac.navy.mil



Commander
LANTNAVFACENGCOM
Attn: Code 1614
1510 Gilbert Street
Norfolk, VA 23511-2699